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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,853

06/28/2006

Matteo Cherchi

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FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

RAHLL, JERRY T

ART UNIT

PAPER NUMBER

2874

MAIL DATE

DELIVERY MODE

01/10/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/584,853	CHERCHI ET AL.	
	Examiner	Art Unit	
	JERRY T. RAHLL	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-19 is/are rejected.
- 7) ☒ Claim(s) 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see "Remarks", filed 27 October 2010, with respect to the rejection(s) of claim(s) 11-18 under 35 USC § 102(b) have been fully considered and are persuasive.
2. In particular, Applicant's arguments persuasively point out the manner in which the claimed refractive index properties are not inherent (see Remarks at page 7).
3. Therefore, the rejection has been withdrawn.
4. However, upon further consideration, a new ground(s) of rejection is made in view of 35 USC § 103(a), please see below.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 11-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application Publication 2002/0118916 to Lee et al. (hereinafter "Lee").**

7. Regarding Claim 11, Lee describes an optical mode converter (Fig 1) comprising a coupling waveguide (102) having at an input end a first effective refractive index, the coupling waveguide comprising a tapered core (108) of a substantially constant refractive index (n_1) with a substantially square cross section (Fig 3) at the input end having a size that tapers down moving away from the input end, the coupling waveguide having a cladding (106) at least

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partially surrounding the tapered core; and a receiving waveguide (104) having a second effective refractive index at an output end, comprising a core of a substantially constant refractive index (n_2) greater than the refractive index of the tapered core of the coupling waveguide ([0029]), and a cladding (106) at least partially surrounding the core, a side surface of the tapered core of the coupling waveguide being optically in contact (Fig 5A), in a coupling portion thereof (112), with the receiving waveguide so as to allow optical coupling between the coupling waveguide and the receiving waveguide.

8. Regarding the further limitations of Claim 11 and the limitations of Claims 12-14 and 16, Lee is silent as to the relative refractive indices of the waveguides. However, it is well known in the art to use waveguides having different refractive indices (as suggested by Lee's reference to a "high Δn core" and a "Low Δn Core"). It would have been obvious to one of ordinary skill in the art at the time of invention to use refractive indices having the claimed relative values in the structure of Lee, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

9. Regarding Claim 15, Lee describes the core of the receiving waveguide is tapered over at least a portion that is optically in contact with the coupling portion of the coupling waveguide (Fig 1).

10. Regarding Claims 17 and 18, Cho describes and a launching single mode optical fiber waveguide coupled to an input end of said coupling waveguide ([0013], [0037]).

11. Claim 19 is essentially a method of forming the above-described optical mode converter. As discussed above, Lee describes the structure of the mode converter. Lee is silent as to the

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steps used to create the structure. However, the claimed steps of Claim 19 are well-known in the art, as exemplified by the disclosure of Cho (see Figs 7a-7g). At the time of the invention, it would have been obvious to one of ordinary skill in the art to use the well-known steps to make the structure described by Lee. The motivation for doing so would have been to create the device of Lee using commonly known tools.

Allowable Subject Matter

12. Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claim 20 describes a step of growing a ridge on the top of the cladding layer. This is subject matter not described or reasonably suggested, in conjunction with the further limitations of the present claims, by the prior art of record.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JERRY T. RAHLL whose telephone number is (571)272-2356. The examiner can normally be reached on M, W-Sa (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Uyen-Chau Le can be reached on 571-272-2397. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jerry T Rahll/
Primary Examiner, Art Unit 2874